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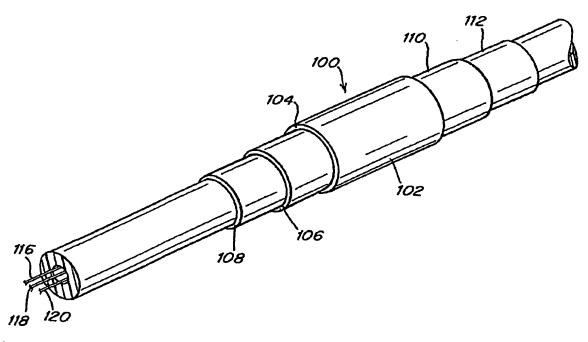
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR ADJUSTING ELECTRODE DIMENSIONS



(57) Abstract: Extendable and expandable ablation electrodes are disclosed. Electrophysiology catheter systems include ablation electrodes that maintain a reduced cross-sectional profile during introduction into a patient and are extendable and/or expandable once positioned at a lesion site. The expanded electrodes having a larger length or and/or diameter can help to produce large lesions. Controllability of the dimensions of the ablation electrodes may be improved.

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61B18/14

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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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EPO-Internal

	NTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 514 246 B1 (FLEISCHMAN SIDNEY D ET AL) 4 February 2003 (2003-02-04)	1,11-13
A	column 8, line 26 - line 34; figures 12a,b	16
X	US 6 488 680 B1 (FRANCISCHELLI DAVID E ET AL) 3 December 2002 (2002-12-03) column 6, line 63 - column 7, line 2; figure 5	1,11-13
x	WO 95/20360 A (VALLEYLAB INC) 3 August 1995 (1995-08-03) column 6, line 14 - line 20; figures 1,2	1,11-13
A	US 6 178 354 B1 (GIBSON CHARLES A) 23 January 2001 (2001-01-23) abstract; figure 1	1,11
	-/	

X Further documents are listed in the continuation of box C.	X Patent family members are listed in annex.		
 Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed 	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report		
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Mayer-Martenson, E		
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. WO 02/087437 A (BARD INC C R ; FALWELL GARY (US); MAC ADAM DAVID (US))
7 November 2002 (2002-11-07)
page 7, line 15 - line 22 Α 1,16

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
(Continuation of item 2 of first sneet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-7, 11-13, 16-19
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7,11-13,16-19

axially adjustable electrode

2. claims: 8-10,14,15,20-31

radially adjustable electrode

information on patent ramily members

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PCT/US2004/009618

			FC1/032004/009618		
Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 6514246	81	04-02-2003	US US CA EP	6171306 B1 5582609 A 2003088244 A1 2174131 A1 0723469 A1	09-01-2001 10-12-1996 08-05-2003 20-04-1995 31-07-1996
			JP WO CA EP	10507373 T 9510327 A1 2174129 A1 0754075 A1	21-07-1998 20-04-1995 20-04-1995 22-01-1997
			JP JP WO	9509069 T 2004154597 A 9510318 A1	16-09-1997 03-06-2004 20-04-1995
			WO US US	9510236 A1 2002193790 A1 2003018330 A1	20-04-1995 19-12-2002 23-01-2003
			US US US US	6357447 B1 6447506 B1 6001093 A 6471699 B1 6106522 A	19-03-2002 10-09-2002 14-12-1999 29-10-2002
			US US WO US	6129724 A 5991650 A 9510321 A1 6146379 A	22-08-2000 10-10-2000 23-11-1999 20-04-1995 14-11-2000
		·	WO US US WO	9510319 A1 5545193 A 5871523 A 9510225 A1	20-04-1995 13-08-1996 16-02-1999
			US WO US	5637090 A 9510226 A1 5860920 A	20-04-1995 10-06-1997 20-04-1995 19-01-1999
US 6488680	B1	03-12-2002	AU EP WO US	5365601 A 1278472 A2 0182813 A2 2003036789 A1	12-11-2001 29-01-2003 08-11-2001 20-02-2003
WO 9520360	A	03-08-1995	AU DE WO JP JP	1076195 A 9490471 U1 9520360 A1 2925036 B2 9501859 T	15-08-1995 26-09-1996 03-08-1995 26-07-1999 25-02-1997
US 6178354	B1	23-01-2001	CA CA DE EP EP	2351323 A1 2353454 A1 1133264 T1 1133264 A1 1135078 A1	08-06-2000 08-06-2000 04-07-2002 19-09-2001 26-09-2001
			JP JP WO WO	2002531164 T 2002531165 T 0032129 A1 0032130 A1	24-09-2002 24-09-2002 08-06-2000 08-06-2000
WO 02087437	A	07-11-2002	EP JP WO	1383426 A1 2004532073 T 02087437 A1	28-01-2004 21-10-2004 07-11-2002